Dynamic transmission and its composition of pollution air mass based on DPC data monitoring

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With the accelerated development of industrialization and urbanization in China, the problem of air pollution in China has become increasingly prominent, which has brought many negative effects on people's health and life [1]. The monitoring of the dynamic transmission of polluted air mass can provide a basis for the prediction and prevention of air pollution [2,3].

Fine particles are the main components of polluted air masses, and fine particles have strong polarization sensitivity. Based on the sensitivity of polarization to fine particles, a recognition algorithm for identifying polluted air masses is constructed by using Gaofen-5 (GF-5) Directional Polarimetric Camera (DPC) data. Based on this algorithm, a contaminated event in China is dynamically tracked and identified, and the transmission path of the contaminated air mass is obtained. The composition of the polluted air mass can be obtained by utilizing the spatial distribution characteristics of the small particle model [4] and the transport path of the polluted air mass in China. Then, the composition and concentration of the polluted air mass were analyzed by using backward trajectory model, the Potential Source Contribution Function, and the Concentration-Weighted Trajectory. Finally, CALIPSO products were used to verify the results of the air mass obtained. The comparison results show that the pollution identification algorithm is effective, and its composition and concentration have high accuracy. This algorithm has important scientific reference value for the application of DPC data to monitor air pollution and its traceability in China.

References

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